

JUNCTION BOXES WITH CORNER ADJUSTMENT



Junction Boxes are used to connect a group of load cells from the same scale to an electronic indicator, to obtain the sum of the signals from the load cells.

For platform scales and weighbridges / truck scales, once the scale is mechanically level it can be helpful to make small adjustments to the output signals from the individual load cells; this is called "Corner Adjustment."

If the junction box is fitted with internal high-precision potentiometers and there is only a small difference between the output signals from the load cells when a constant known weight is applied at each corner, the output signals can be electronically equalized using the potentiometers in the junction box.

Junction box connection details:

The connection of the load cells is made at the terminals marked as LOAD CELL, numbered for each cell, while the connection to the indicator is marked as TO DISPLAY.

Junction Box Marking	Description
+V	Positive Excitation
-V	Negative Excitation
+SIG	Positive Output Signal
-SIG	Negative Output Signal
SHIELD	Shield / Screen
+S	Positive Sense or Positive Excitation Reference Voltage
-S	Negative Sense or Negative Excitation Reference

It is highly recommended to use a 6-wire shielded cable from the junction box up to the electronic indicator, providing this indicator has a 6-wire connection (with sense connections). Thames Side can offer the special Polyurethane load cell 6-wire shielded signal cable CA-PU-5.7MM-6C for this purpose.

Connect all ground terminals to a single earth point:

The ground terminal of the junction box (if available), the ground terminal of the indicator and the metallic structure of the scale should be connected to a SINGLE earth terminal point, to equalize the earth potentials of the different components. This is a critical point to avoid problems. It is recommended that a ground wire is connected between the scale and the indicator to balance the potentials.

Important note: before starting, set all potentiometers to zero. To do so, measure the resistance by means of a multi-meter between the Terminal +V from the side of the DISPLAY INDICATOR and the Terminal +V of each load cell, then adjust each potentiometer accordingly. Then, the excitation voltage should also be measured at the terminals of each load cell individually; the potentiometer will be set to zero when the excitation voltage at the terminals of that load cell is the same as the excitation voltage delivered from the indicator to the Junction Box.

Corner Adjustment procedure:

The objective of "Corner Adjustment" is to obtain the same weight indication when a known test weight is placed at the various supporting points (corners) of the scale. Therefore, the objective is not to equalise the different output signal levels of each unloaded empty load cell).

1. Calibrate the electronic indicator with a recognised mass value, i.e. a test weight. At this point, a very accurate adjustment is not necessary, as it should be done at the end.
2. Place alternatively the same test weight on each supporting point and note the read value. The heavier the weight used, the better the differences will be seen, and the more reliable the adjustment.
3. Increase the resistance of the potentiometer of the corner showing the highest reading. The excitation voltage (and therefore the output signal) of that individual load cell will be proportionally reduced.
4. Repeat steps 2 and 3 to balance the differences of the readings at each corner.
5. Finally, re-calibrate the zero and the span of the scale following the operating instructions of the electronic indicator.

